

GENERAL DYNAMICS

Software Definable Radio Aviation Key to Global Interoperability

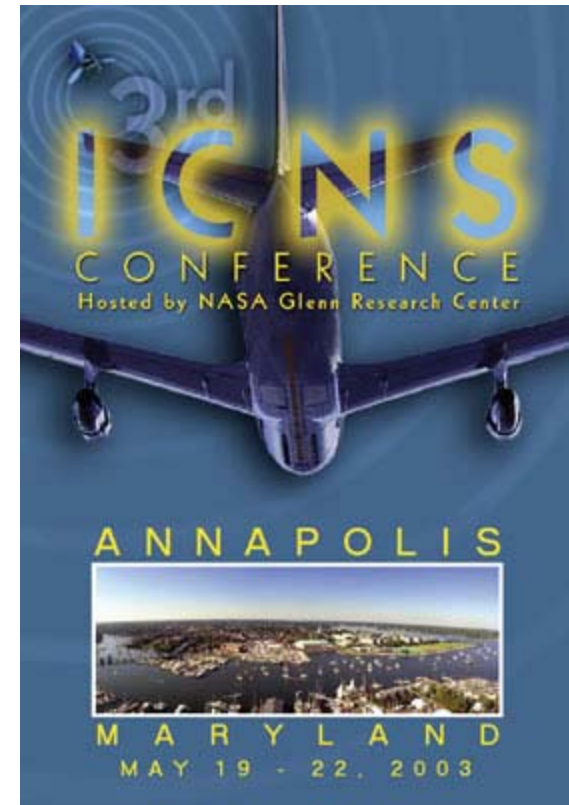
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General Dynamics Decision Systems

Content

- **The aviation need**
 - Global interoperability
- **SDR as a solution**
- **General Dynamics expertise**
 - The future



The Challenge: Global Harmonization of ADS-B Datalink

- **Many factors influence selection of datalink:**
 - State decisions
 - Large vs small aircraft link decision (US)
 - Domestic vs International operations
 - Oceanic
 - Availability of Frequency spectrum
 - Frequency congestion

The Solution: A Software Definable Radio

What is a Software Definable Radio?

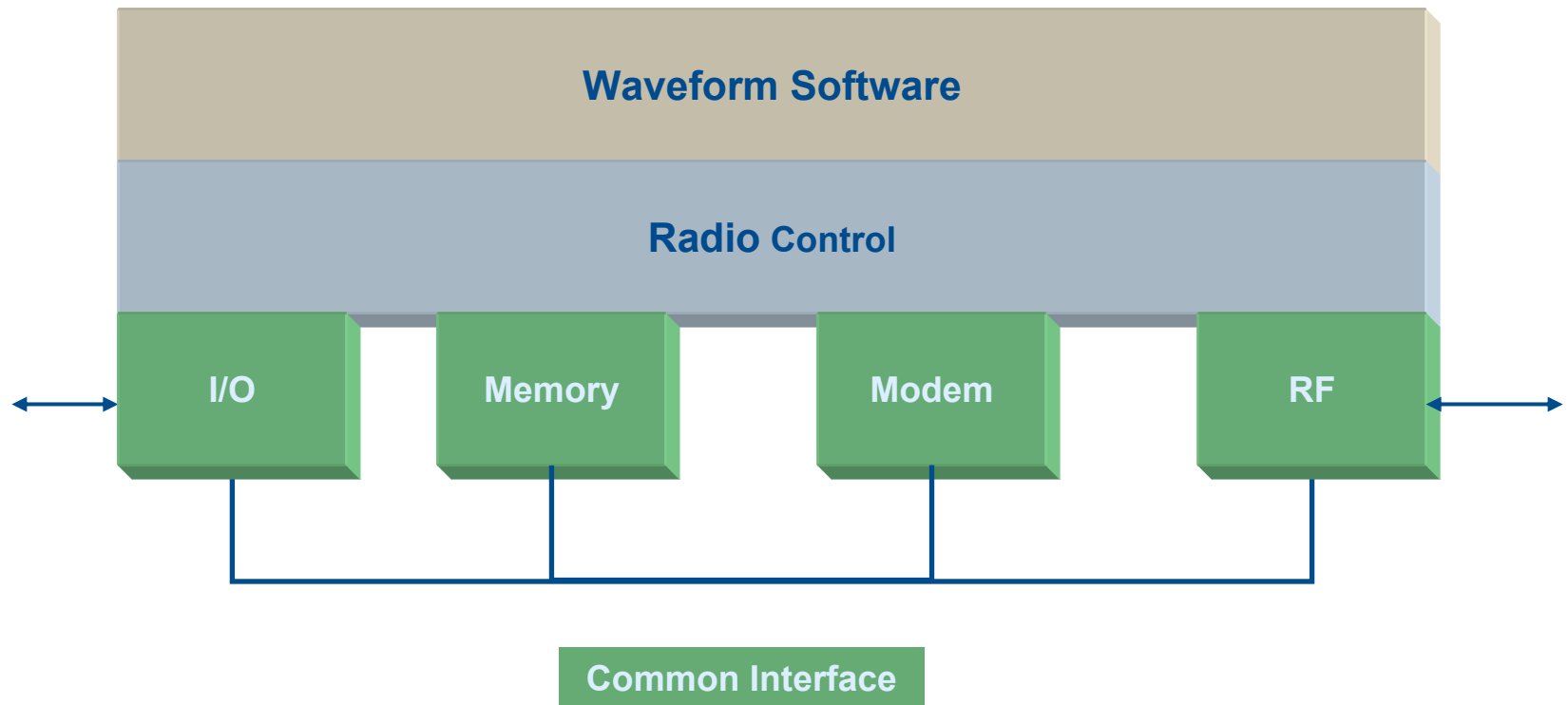
- **The Marketing Perspective**

- Handset capable to support next 10 years worth mobile waveforms
- Can be loaded with new features “over the air”
- Product evolution is accomplished through software changes

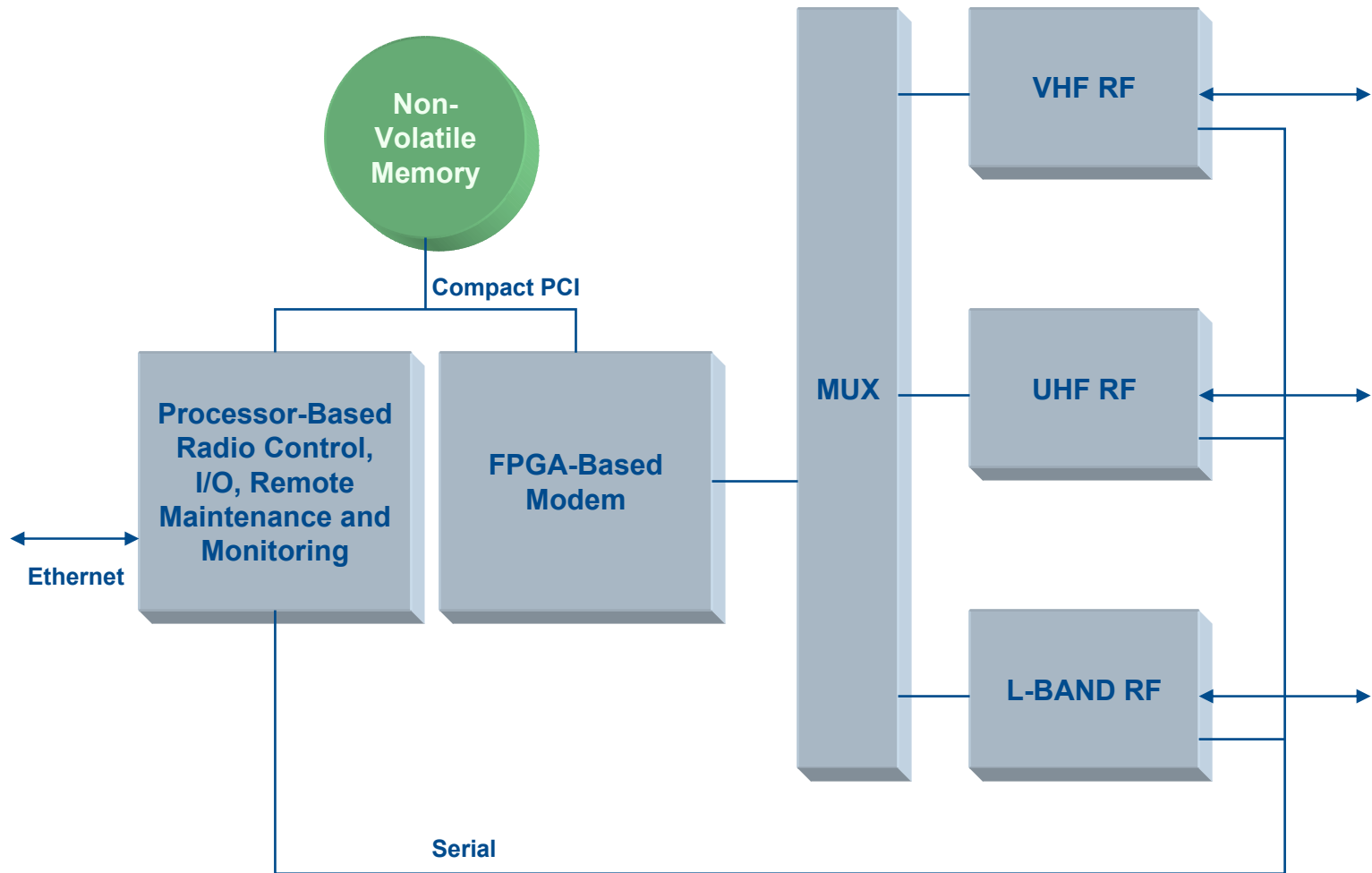
- **The Engineering Perspective**

- Transceiver that must tune from DC to Daylight instantly
- Enormous dynamic range
- Unheard of linearity
- Suffused with software hooks
- Software architecture with more layers than a wedding cake

SDR Functional Architecture



SDR Notional Architecture



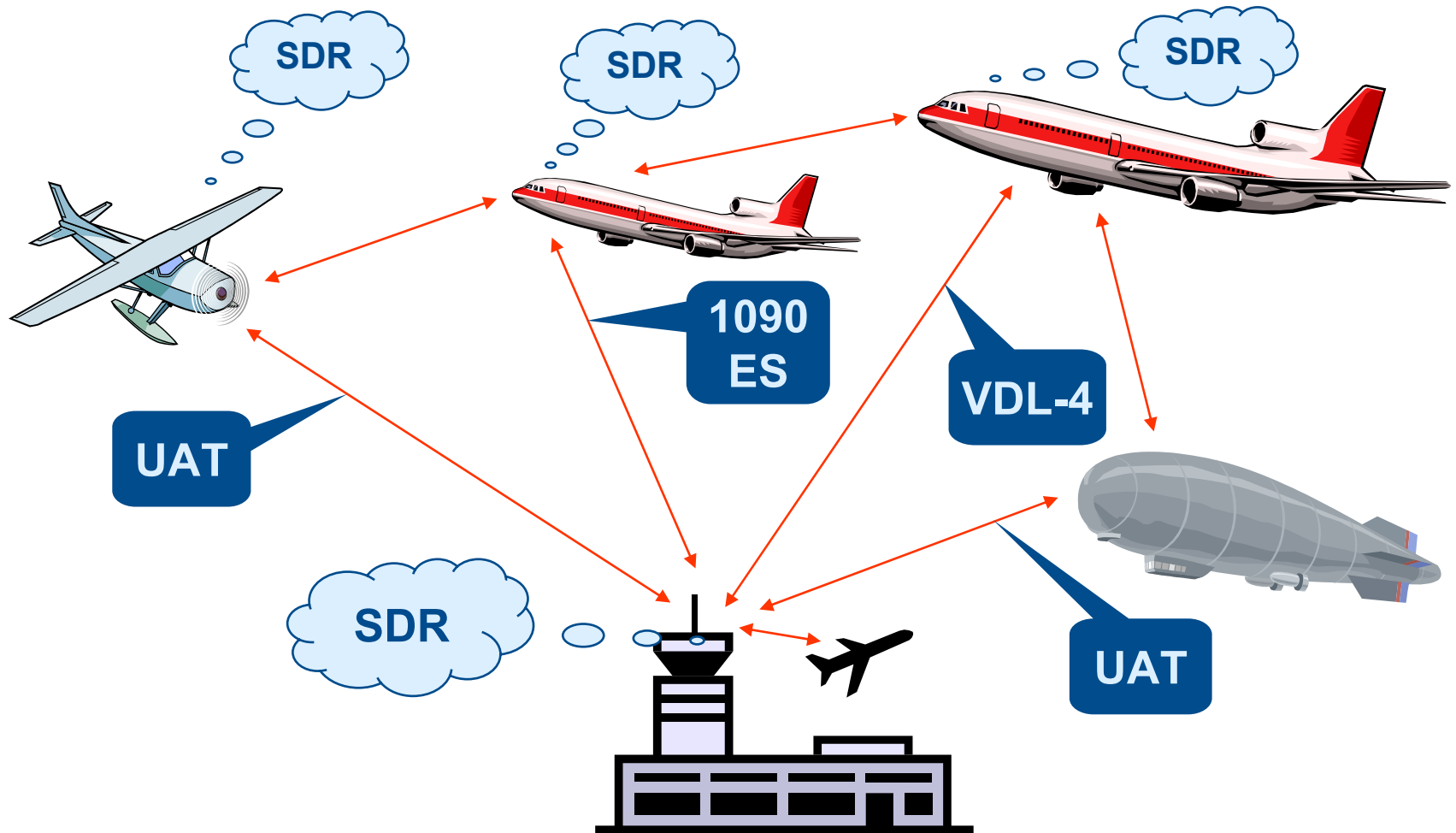
Software Definable Radio Benefits

- One radio on the aircraft and one radio on the ground.
- Simultaneously handles multi frequencies and applications.

UAT
1090 MHz
VDL-4
Satellite
Other

ADS-B
TIS
FIS
Messaging
Voice

SDR Ensures Interoperability



General Dynamics Expertise in SDR

- **Developed and fielded several SDR products**
 - Aircraft
 - Ships
 - Portable
- **Capabilities**
 - Simultaneously handle multiple frequencies and waveforms
 - Fully field re-programmable
- **The next step is miniaturization**

The Looking Glass

- **Software Definable Radio**
 - On the aircraft
 - On the ground
- **Global Interoperability**
 - Aircraft can fly anywhere
 - Always able to communicate, navigate and surveil
- **Cost Reduction**
 - One radio with redundancy
 - Reduced sparing, training

